

### Remarks

Applicants thank the Examiner for her consideration and helpful suggestions. Applicants respectfully request examination and reconsideration of the newly amended claims which implement suggestions discussed with the Examiner on 23-JUN-1999.

### Table of Contents

- I. Status of the Application
- II. The Invention
- III. The Amendments
- IV. The Non-Art Rejections and Objections

#### I. Status of The Application

Claims 1-43 are pending. Claims 9-12, 17-20, and 23-42 were acknowledged as allowable if the rejections under 35 U.S.C. §112, ¶1 and 2 were overcome. Applicants believe that the newly amended claims are fully supported and introduce no new matter. Attached, for the Examiner's convenience, is a listing of the revised claims. Applicants believe no new issues are raised in the presently pending claims and respectfully request examination of the newly amended claims.

#### II. The Invention

The present invention is based, in part, upon the discovery of a family of polypeptides that appear to act as a costimulator of T cell activation. In particular, the invention provides mammalian, e.g., rodent and primate, polynucleotide sequences that are expressed in the thymus, and are induced on T cells and spleen cells following activation.

#### III. The Amendments

The present amendments represent implementation of the discussions Applicants' representatives had with the Examiner on 23-JUN-99. Applicants thank the Examiner for her help and consideration.

In conversation with the Examiner, Applicants received approval for the subject matter of allowable claims in Markush format to be split into distinct claims, e.g., separating claim 10(parts a-d) into two distinct claims (i.e., combining parts (a) + (c) of Claim 10 into one claim; and parts (b) + (d) of Claim 10 into another claim). In a similar fashion, Applicants have also separated allowable Claims 27, 29, and 38 into distinct claims. Applicants have included the former Claims 10, 27, 29, and 38 for the convenience to compare old with new formats.

Similarly, to avoid confusion, Applicants have canceled three of these allowable claims (i.e., 10, 27, and 38) to advance seven New Claims 44-50 that reflect the separation of these former allowable claims into distinct new claims. (Note: Old Claim 29 (b) remains as claim 29 with amendments to separate part (a) from it.)

To clarify the numbering and relationship between the former Old Claims and the presently adopted New Claims the following Table is provided.

#### Allowable Claims

Old = New

10 (a) + (c) = 44

10 (b) + (d) = 45

27 (a) + (b) = 46

27 (c) + (d) + (e) = 47

29(a) = 48

38 (a) + (c) = 49

38 (b) + (d) = 50

The highest number of claims previously paid for was three independent claims and twenty-six total claims. The newly amended and added claims now number four independent claims and thirty total claims. Accordingly, claim fees for three additional dependent claims are required, which should total \$68.00, however, should Applicants' calculation be in error, authorization is hereby provided to the Commissioner to make the appropriate charges or credits to the DNAX Research Institute Deposit Account 04-1239. For the convenience of the Examiner, Appendix A presents the proposed claims.

Applicants amendments of canceling Claims 10, 27, and 28 are solely intended to separate the subject matter of the allowable claims into different groupings while retaining previous claim language. Any discrepancies between new and old claim language would be inadvertent error. If so, Applicants respectfully request Examiner notify Applicants of typographical errors so that correction can be made or an Examiner's amendment be entered.

#### **IV. The Non-Art Rejections and Objections Rejections**

##### **Section 112 First Paragraph Rejections**

Claims 9-12, 17-20, and 23-43 were rejected under 35 U.S.C. §112, ¶1. (Nos. 6 and 7). Applicants traverse the rejections.

Specifically, the Office Action alleges that the hybridization limitations of claims 9, 25-26, 30, 32, 33, 37, and 43 are not supported in the specification, however, the Examiner suggested the rejections could be overcome by reciting the hybridization conditions listed at page 37 of the specification (see, the last sentence of No. 7 of Paper No. 12). Applicants thank the Examiner for the helpful suggestion and have adopted the hybridization conditions described in the specification. Accordingly, Applicants respectfully request withdrawal of the rejections.

The Office Action also alleges that the phrases "mature polypeptide" and "mature coding portion" of Claims 10, 30, and 40 are not supported in the specification.

To clarify, the phrase "mature polypeptide" refers to a polypeptide that has undergone processing to remove a leader sequence, and the phrase "mature coding portion" refers to a polynucleotide sequence that does not encode the leader sequence of such a polypeptide. Therefore, Applicants added the phrase, "that lacks an N-terminal leader sequence" to the claims at issue to specify what the term "mature" is defining. Support is provided e.g., at page 19, lines 6-7; and at page 20, lines 25-36. There Applicants' specification teaches that the polypeptides of the invention have an N-terminal leader sequence which is processed, e.g., typically by cleaving, before the "mature" polypeptide is created. The term "mature polypeptide" is a phrase that is commonly used in the art to refer to such processing. As evidence of this belief, Applicants include herein (Appendix B) a copy from a standard textbook in the art (Alberts et al. (ed.; 1989) Molecular Biology of the Cell 2nd ed., Garland Pub., N.Y., N.Y.) illustrating how cleavage of a leader sequence results in a "mature" protein. Accordingly, Applicants respectfully request withdrawal of the rejections.

The Office Action also alleged that the polynucleotide residues recited in Claim 32 were not described in the specification and thus were rejected as new matter. Applicants traverse the rejection. This rejection is related to the above rejection, since these polynucleotide sequences refers to the fragment of SEQ ID

NO: 1 or 3 that encodes respectively the N-terminal leader sequence of the corresponding polypeptides of SEQ ID NO: 2 or 4. The leader sequences are described in the specification at page 20, lines 25-36 as amino acid residues, however, the residues in Claim 32 are merely the corresponding polynucleotide fragments encoding these amino residues. Therefore, they are disclosed in the specification as it describes the relationship of the polynucleotide sequence with its cognate amino acid sequence. Therefore, the Claim does not contain new matter and should be withdrawn.

Claim 24 was rejected as the specification allegedly did not provide enablement. Applicants traverse the rejection, however, solely to advance prosecution Applicants have amended the claim to recite that the polynucleotide claimed is one that is a result of the degeneracy of the genetic code. Support can be found in the specification at page 7, lines 10-36. Accordingly, Applicants respectfully request withdrawal of the rejection.

#### **Section 112 Second Paragraph Rejections**

Claims 9-12, 17-18, and 20-42 were rejected under 35 U.S.C. §112, ¶2, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter of the invention (No. 12). While Applicants traverse, the rejections should now be moot due to the present amendments which Applicants believe provide a cure. Accordingly, Applicants respectfully request withdrawal of the rejections. Specifically:

- Claims 19, and 20 were alleged still indefinite under 35 U.S.C. §112, ¶2, based on Applicants' amendment of 18-MAR-99 (Paper No. 11) over use of the phrase "at least about." (Nos. 4 and 5). Applicants respectfully traverse the rejection as the phrase was previously amended to recite "at least." Accordingly, the rejections are moot in view of the former amendment of the claims in Paper No. 11.
- Claims 9, and 37 were alleged indefinite for the phrase "selectively hybridizes." (No. 13). Applicants have removed the term "selectively" accordingly, no indefiniteness should still exist.
- Claims 10, 30, 38(c), 38(d), and 40 were alleged indefinite for the phrase "mature polypeptide." (Nos. 14 and 21). To clarify that the phrase "mature polypeptide" refers to a polypeptide that has undergone processing to

remove a leader sequence, Applicants have added the phrase, "that lacks an N-terminal leader sequence" to the claims. Support is provided e.g., at page 19, lines 6-7; at page 20, lines 25-36; and as described above.

- Claims 10-12, 17, 18, 20-29, 31-36, and 41-42, were alleged indefinite for lack of antecedent basis. (Nos. 15-18). Applicants thank the Examiner for the helpful suggestions and have adopted language similar to that suggested.
- Claim 31 was alleged indefinite over recitation of the phrase "from SEQ ID NO:4" since it appears a polynucleotide sequence was suggested. (No. 19). Applicants thank the Examiner for the helpful suggestions and have adopted language reciting, "SEQ ID NO:3."
- Claim 36 was alleged indefinite over recitation of the phrase "said polypeptide." (No. 20). Applicants thank the Examiner for the helpful suggestion and have adopted the suggested language reciting, "said antigenic polypeptide."
- Claim 39 was alleged indefinite over use of the phrase "two-fold or less conservative amino acid substitution" as it was unclear how a substitution could be a two-fold substitution. (No. 22). Applicants desired to indicate that the mature polypeptide had one or two conservative amino acid substitutions therefore, to clarify the claim, the language was changed to recite, "less than three conservative amino acid substitutions."
- Claims 17, 36, and 42 were alleged indefinite for lacking essential conditions. (No. 23). Specifically, the Examiner suggested adding the conditions of a host cell and obtaining or isolating the polypeptide from the culture. Applicants thank the Examiner for the helpful suggestion and have adopted language similar to that suggested.

For all of the reasons given above, Applicants believe that Claims 9-12, 17-18, and 20-42 should now longer be rejected under 35 U.S.C. §112, ¶2. Accordingly, Applicants respectfully request withdrawal of all the Section 112, paragraph two rejections.


### Conclusion

Applicants maintain that presently amended claims (Claims 9, 11-12, 17-18, 20, 23-26, 28-37, and 39-43) and new claims (Claims 44-50) clearly and patentably define the invention. Accordingly, Applicants respectfully request reconsideration and passage of the pending claims to allowance at the earliest possible convenience.

Applicants believe the present amendments and response to the objections and/or rejections raised in the 07-JUN-1999 Office Action (Paper No. 12) represent a complete, timely, and good faith response to all the issues raised therein. Should the Examiner deem allowance inappropriate, Applicants respectfully request an interview be granted with the undersigned representative to discuss the issues. If the Examiner would like to discuss any point raised in the Office Action, Applicants' representative may be reached at (650) 496-1244.

Respectfully submitted,

Dated: JUNE 29, 1999

  
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Enclosures and attachments:

Appendix A- Proposed claims as of JUNE 1999

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